

REMARKS

Claims 41-51, 53-55, and 57-62 are pending. To simplify prosecution Claims 18-40 have been cancelled and the remaining claims have been directed to three-layered tubes, where the polymers constituting these layers only contain hydrogenated block copolymers. Independent Claim 41 has been amended to use the transitional claim language "consisting essentially of" and to further describe the components of resins (I) and (II). The transitional claim language "consisting essentially of" permits the inclusion of ingredients that do not materially affect the basic and novel characteristics of the invention. Thus, the Applicants believe that this language should exclude random copolymer from the claimed tube compositions, because (as shown in the attached Declaration) the inclusion of substantial amounts of random copolymer negatively affect the functional properties of the resulting tubes.

In addition to the above amendments, other minor editorial changes have been made to the dependent claims to make these claims consistent and clear. Accordingly, the Applicants do not believe that any new matter has been added. Favorable consideration is now respectfully requested.

Rejection--35 U.S.C. § 103(a)

Claims 18-26, 28-30, 32-51, 53-55, and 57-62 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kodama et al. (JP 09-254339), in view of Hotta, U.S. Patent No. 4,588,777. Kodama does not render obvious the claimed invention, because it does not disclose or suggest tubes of the present invention which are produced from block copolymer that do not contain random copolymer, and which have superior functional properties, such as significantly decreases tube-to-tube sticking after heat sterilization.

The Official Action indicates that the claims were written in open claim language which would permit the inclusion of random copolymer. The amendment above addresses this concern by limiting the claims to tubes consisting essentially of the specified ingredients and the specified ingredients are not random copolymers. Thus, the claimed tubes cannot inherently be the same as the prior art tubes which contain random copolymer. Moreover, the Applicants now present evidence that that addition of random copolymer affects the functional properties of medical tubing by adversely affecting their ability to be sterilized without tube-to-tube sticking.

The attached Declaration shows the advantages of the claimed multi-layered medical tube compared to Kodama's tube. Table 1 from the attached Declaration is reproduced below and shows the compositional differences between the tube of the invention (Experiment 1) and the tube of Kodama (Experiment 2).

Table 1

	Experiment 1	Experiment 2
	Present invention	<u>Kodama et al.</u>
Connection layer (II') (outer layer)	(a') 50 mass% of a polypropylene resin and (b') 50 mass% of: hydrogenated isoprene <u>block</u> copolymer	(A') 50 mass% of a polypropylene resin and (B') 50 mass% of: hydrogenated styrene-butadiene <u>random</u> copolymer
Substantial layer (I) (intermediate layer)	(a') 30 mass% of a polypropylene resin and (b') 70 mass% of: hydrogenated isoprene <u>block</u> copolymer	(A') 30 mass% of a polypropylene resin and (B') 70 mass% of: hydrogenated styrene-butadiene <u>random</u> copolymer
Connection layer (II) (inner layer)	(a') 100 mass% of a polypropylene resin	(A') 100 mass% of a polypropylene resin

The three-layered tubes of the present invention (Experiment 1 above) and of Kodama et al. (Experiment 2 above) were steam sterilized at 121°C for 20 minutes and their (i) Anti-kinking properties, (ii) Resistance against tube/tube sticking and (iii) Resistance against

tube/film sticking were determined. The results of the experiments are shown in Table 2 below which is reproduced from the attached Declaration.

Table 2

	Experiment 1	Experiment 2
	This invention	<u>Kodama et al.</u>
Anti Kinking property (mm)	14.0 < 20mm	<input type="radio"/> 13.0<20mm
Tube/tube sticking (N)	34.6 < 35N	<input checked="" type="radio"/> 41.3>40N <input checked="" type="checkbox"/>
Tube/film sticking (N)	0.25<10N	<input type="radio"/> 0.25<10N

The results in Table 2 confirm the superior functional properties of the tubes of the invention. One salient difference between the tube of the present invention (Experiment 1) and the prior art tube of Kodama et al. (Experiment 2) becomes immediately apparent from the tube-to-tube sticking (N) data above. The tube/tube sticking of the tube of the present invention (34.6N) was less than 35 N (lowest criteria value, see claim 41) and was evaluated as very good and satisfactory (◎), while the tube-tube sticking value for Kodama's tube (41.3N) was more than 40N (upper criteria value) and rated as poor (X). These results indicate that the tube of the Experiment 2 (Kodama's tube) would not be substantially usable as medical tube because of its poor resistance against tube/tube sticking under heat of sterilization (121°C, 20 minutes).

Therefore, as shown above and in the Declaration the addition of a random copolymer dramatically worsens and deteriorates peeling strength. On the other hand, the tube of the invention which is composed only of block copolymer has excellent peeling strength (34.6N) (decreased tube/tube sticking). Since there is no suggestion in Kodama for omitting random copolymer to obtain such a tube with superior non-stick properties, nor any reasonable expectation of success for obtaining such superior properties by omitting the random copolymer, the Applicants respectfully request that this rejection now be withdrawn.

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Reply to Office Action of October 21, 2004

CONCLUSION

In view of the above amendments and remarks, the Applicants respectfully submit that this application is now in condition for allowance. Early notification to that effect is earnestly solicited.

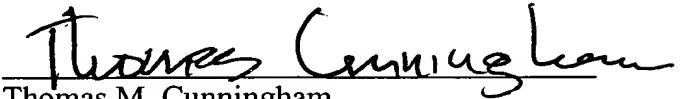
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